Guangzhou Discrete Mathematics Seminar

Flexible list coloring and maximum average degree

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The *flexible list coloring problem* is a problem whose input is a graph G, a color list assignment L, and a set of coloring preferences at some vertex subset of G. The goal of the problem is to find an L-coloring of G that satisfies as many coloring preferences as possible. Dvořák, Norin, and Postle asked whether a constant proportion of preferences can be satisfied whenever G is d-degenerate graph and assigns lists of size $(d+1)$.

In this talk, we answer a special case of this question. We show that if G has maximum average degree less than 3 and an assignment L of lists of size 3, then there exists $c > 0$ such that for any set of coloring preferences on G, some L-coloring of G satisfies a c proportion of these preferences. This generalizes a similar theorem of Dvořák, Masařík, Musílek, and Pangrác for planar graphs of girth six. Our main new tool is a reducible subgraph framework which generalizes a previous framework of these four authors.

This talk contains joint work with Richard Bi.

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